

CLAIMS

What is claimed is:

5 1. A system for transmitting auxiliary data within a modulated video signal from a broadcast source to a hand-held device with a slot, the system comprising:

the broadcast source comprises means for transmitting auxiliary
10 data to the slotted hand-held device via the modulated video signal;

an interface device electronically coupled to the hand-held device via the slot and comprises a card microcontroller, a
15 receiver electronically coupled to the card microcontroller for receiving the modulated video signal from the broadcast source, and circuitry electronically coupled to the card microcontroller and the receiver for demodulating the modulated video signal and reproducing the auxiliary data, and transferring the auxiliary
20 data to the hand-held device via an interface protocol; and

the hand-held device with the slot comprises a microcontroller for processing the signal auxiliary data received via the interface protocol from the interface device.

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2. The system of claim 1, wherein the interface device further comprises storage disposed on the interface device and coupled to the microcontroller for storing the auxiliary data.

30 3. The system of claim 1, wherein the memory card is a Secured Digital card, the interface protocol is SDIO, and the slot is a SD slot.

4. The system of claim 1, wherein the hand-held device with the slot further comprises a means of supplying the user with promotional opportunities based on the receipt of the auxiliary data.

5. The system of claim 1, wherein the hand-held device with the slot further comprises wireless Internet access.

6. The system of claim 1, wherein the broadcast source is a display device and the receiver is a photodetector.

7. The system of claim 1, wherein the interface device is an interface card.

8. A system for transmitting auxiliary data within a modulated video signal from a broadcast source to a hand-held device with a slot, the system comprising:

the broadcast source comprises means for transmitting auxiliary data to the slotted hand-held device via the modulated video signal;

an interface device electronically coupled to the hand-held device via the slot and comprises a card microcontroller, a receiver electronically coupled to the card microcontroller for receiving the modulated video signal from the broadcast source, and circuitry electronically coupled to the card microcontroller and the receiver for transferring the modulated video signal to the hand-held device via an interface protocol; and

the hand-held device with the slot comprises a microcontroller and other circuitry for processing the modulated video received

via the interface protocol from the interface device and demodulating the modulated video signal and reproducing the auxiliary data.

5 9. The system of claim 8, wherein the interface device further comprises storage disposed on the interface device and coupled to the microcontroller for storing the auxiliary data.

10 10. The system of claim 8, wherein the memory card is a Secured Digital card, the interface protocol is SDIO, and the slot is a SD slot.

15 11. The system of claim 8, wherein the hand-held device with the slot further comprises a means of supplying the user with promotional opportunities based on the receipt of the auxiliary data.

20 12. The system of claim 8, wherein the hand-held device with the slot further comprises wireless Internet access.

 13. The system of claim 8, wherein the broadcast source is a decoder box and the receiver is a radio frequency receiver.

25 14. The system of claim 8, wherein the interface device is an interface card.

30 15. A method of transmitting auxiliary data within a first and a second field of at least one frame of a video signal from a broadcast source to a hand-held device, the method comprising:
selectively modulating a carrier signal into either the first field or the second field of the video signal thereby modulating the video signal with complementary bits of the auxiliary data;

transmitting the video signal from the broadcast source to the hand-held device;

5 receiving the video signal on a receiver of the hand-held device;

performing a field comparison the successive fields on the hand-held device; and

10 subtracting intensity of the second field from the first field to determine the auxiliary data received by the receiver.

14. The method of claim 13 wherein the receiver is a photodetector and the broadcast source is a display device.

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15. The method of claim 13 wherein the hand-held device is a slotted hand-held device operatively associated with an interface device.

20 16. A method of transmitting more than one bit of auxiliary data within at least one field of a video signal from a broadcast source to a hand-held device, the method comprising:

25 splitting each field of a frame of the video signal into more than one segment;

selectively modulating each segment of the at least one field of the video signal with a carrier signal thereby creating a modulated video signal;

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transmitting the modulated video signal from the broadcast source to a receiver of the hand-held device;

receiving the modulated video signal on the receiver;

determining a location of a beginning of a first field of the at least one field of the modulated video signal; and

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reading the more than one bit of the auxiliary data within at least one field in the more than one segment by use of an offset from the location in the beginning of the first field of the modulated video signal.

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17. The method of claim 16, wherein the more than one segment is four equal segments.

18. The method of claim 16 wherein the receiver is a
15 photodetector and the broadcast source is a display device.

19. The method of claim 18, wherein the step of determining the location of the first field is by synchronizing reception of the video signal to the vertical retrace period.

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20. The method of claim 19, wherein the step of synchronizing reception of the video signal to the vertical retrace period is detecting a portion of the video signal without auxiliary data relating to the timing of the vertical retrace
25 period, awaiting a period of time equivalent to a vertical retrace period for a refresh of the video signal, redetecting with the portion of the video signal without auxiliary data, and determining the timing of the vertical retrace period by confirming redetection of the video signal without auxiliary data
30 after a refresh of the display device.

21. The method of claim 18, wherein the more than one bit of auxiliary data is a data packet of at least three bytes

consisting of a first data byte with a marker, at least one byte thereafter containing information, and a final byte containing a CRC.

5 22. The method of claim 18, wherein the step of determining the location of the beginning of the first field is by capturing and matching the first data byte with the marker and validating the final byte of the data packet.

10 23. A method for providing auxiliary data to a user of a hand-held device, the method comprising:

obtaining a video signal consisting of at least one frame with a first field and a second field from a signal source for an
15 encoder;

modulating a video subcarrier in the video signal by an operator at the encoder by splitting the fields of the at least one frame of the video signal into more than one segment, selectively
20 modulating a carrier signal into selected segments on the first field and inversely modulating the carrier signal into the second field so that the second field has complementary bits of the first field and thereby creating a modulated video signal,

25 providing the modulated video signal from the encoder to a broadcast source, the broadcast source comprises means for transmitting auxiliary data to the hand-held device via the modulated video signal;

30 transmitting the modulated video signal from the broadcast source to the hand-held device with a microcontroller;

receiving the modulated video signal on a receiver of the hand-held device, the receiver electronically coupled to the microcontroller of the hand-held device for receiving the modulated video signal from the broadcast source;

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determining a location of a beginning of the first field of the at least one field of the modulated video signal, reading the more than one bit of the auxiliary data within at least one field in the more than one segment by use of an offset from the
10 location in the beginning of the first field of the modulated video signal, and performing a field comparison the successive fields on the hand-held device and subtracting intensity of the second field from the first field to determine the auxiliary data received by the receiver.

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24. The method of claim 23 wherein the hand-held device is a slotted hand-held device operatively associated with an interface device.

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